

**Integral Z Series**  
**SATA II & USB 2.5 Inch**  
**Specification**

Rev.H

# 1. Features

Supports 1.5/3.0Gbps SATA I/II interface

Fully Compliant with Serial ATA International Organization: Serial

ATA Revision 2.6 Fully Compliant with ATA/ATAPI-7 Standard

Capacities

Item	Mechanical Height	Capacities
2.5inch (MLC)	9.3mm	32GB, 64GB, 128GB, 256GB

Performance

	Read	Write
32GB	150 MB/s*	38 MB/s*
64GB	160 MB/s*	70 MB/s*
128GB	160 MB/s*	70 MB/s*
256GB	160 MB/s*	70 MB/s*

(\*sequential speeds listed are based on internal testing. Actual performance may vary based on your system settings).

High reliability based on the internal BCH 10bit ECC

Supports SMART (Self-Monitor Analysis and Reporting Technology)

Supports Dynamic and Static Wear Leveling

Supports MLC NAND

Flash Data integrity under power cycling MTBF > 2,000,000 Hours

Power Consumption <

1.75W @ 5V Seek time is

0.1ms~0.2ms

Shock

i. Operating: 1,500G, duration 0.5ms, half sine wave

Vibration

i. Vibration: 20G peak, (Random, 10~2KHz with 3 vibration axis)

ii. Random Vibration

1. 7~800 Operating: 2.1Grms

2. 5~500 Non-Operating: 3.0Grms

Humidity: 0°C~55°C / 95% RH, 10cycles

## Temperature

- i. Operating Temperature: -10°C ~ +70°C
- ii. Storage Temperature: -55°C ~ +95°C

External mini-USB connector (optional) support Mass

Storage Function Fully Compliant with RoHS directive

CE and FCC

compatibility SSD

Weight: 98g

## 2. Pin Assignment and Description

### 2.5inch SSD pin assignment and description

	No.	Plug Connector pin definition	
Signal	S1	GND	2 <sup>nd</sup> mate
	S2	A+	Differential signal A from PHY
	S3	A-	
	S4	GND	2 <sup>nd</sup> mate
	S5	B-	Differential signal B from PHY
	S6	B+	
	S7	GND	2 <sup>nd</sup> mate
Key and spacing separate signal and power segments			
Power	P1	V33	3.3V power (Unused)
	P2	V33	3.3V power (Unused)
	P3	V33	3.3V power, pre-charge, 2 <sup>nd</sup> mate (Unused)
	P4	GND	1 <sup>st</sup> mate
	P5	GND	2 <sup>nd</sup> mate
	P6	GND	2 <sup>nd</sup> mate
	P7	V5	5V power, pre-charge, 2 <sup>nd</sup> mate
	P8	V5	5V power
	P9	V5	5V power
	P10	GND	2 <sup>nd</sup> mate
	P11	DAS/DSS	Device Activity Signal / Disable Staggered Spinup
	P12	GND	1 <sup>st</sup> mate
	P13	V12	12V power, pre-charge, 2 <sup>nd</sup> mate (Unused)
	P14	V12	12V power (Unused)
	P15	V12	12V power (Unused)

## 4. Electrical Specification

### Absolute Maximum Rating

Parameter	Symbol	Condition	Min	Max	Unit
Analog power supply	AV <sub>DDH</sub>		-0.5	6	V
Digital I/O power supply	DV <sub>DD</sub>		-0.5	6	V
Digital I/O input voltage	V <sub>I(D)</sub>		-0.4	DV <sub>DD</sub> + 0.4	V
Storage temperature	T <sub>Storage</sub>		-55	95	°C

### Recommended Power Supply Operation Conditions

Parameter	Symbol	Condition	Min	Typical	Max	Unit
Operation digital power supply	DV <sub>DD</sub>		3.0	3.3	3.6	V
Operation analog power supply	AV <sub>DDH</sub>		3.0	3.3	3.6	V
Ambient operation temperature	T <sub>A</sub>		-10		70	°C
Junction temperature	T <sub>J</sub>		-10		95	°C

### Recommended External Clock Source Conditions

Parameter	Symbol	Condition	Min	Typical	Max	Unit
External reference clock				30		MHz
Clock Duty Cycle			45	50	55	%

### Power Supply DC Characteristics (Idle)

Parameter	Symbol	Condition	Min	Typical	Max	Unit
Digital I/O power supply	I <sub>DVDD</sub>	3.3v		9		mA
Internal digital power supply	I <sub>DDH_VR</sub>	1.8v		88		mA
SATA analog power supply	I <sub>AVDDH_SATA</sub>	3.3v		41		mA
SATA analog power supply	I <sub>AVDDH_SATA</sub>	1.8v		87		mA

### I/O DC Characteristics

Parameter	Symbol	Condition	Min	Typical	Max	Unit
Input low voltage	V <sub>IL</sub>				0.8	V
Input high voltage	V <sub>IH</sub>		2.0			V
Output low voltage	V <sub>OL</sub>		0		0.4	V
Output high voltage	V <sub>OH</sub>		2.6		3.6	V

## 5. Physical Dimensions

2.5inch (99.88mm x 69.963mm x 9.3mm)

